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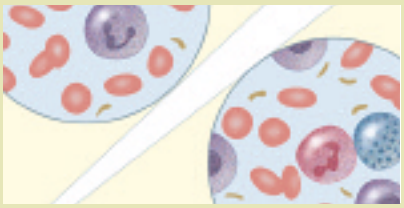

Acute illness often presents atypically in long-term care patients. Atypical presentation refers to the lack of one or more symptoms or signs that usually indicate acute illness. Due to underlying medical illness, nursing home patients with acute infection, metabolic disorders, and even surgical emergencies frequently present with delirium, malaise, or weakness. Nursing assistants are often the first to recognize these non-specific indicators. It is imperative that researchers include assessments by nursing assistants when developing and validating tools to recognize early but atypical indicators of disease.

Key words: *long-term care facility, atypical presentation, delirium, nursing assistants, non-specific symptoms*

Atypical Presentation of Disease in Long-Term Care Patients

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Introduction and Case History

Atypical presentation of disease in older adults has become an axiom of medical training. The term "atypical presentation" refers to the lack of one or more typical sensations or complaints that usually accompany an illness. Instead, patients present with cognitive or behavioural disturbances. The following case is a typical example of disease presentation in the older population.

Mrs. B is an 87-year-old woman with a history of atrial fibrillation, gait disorder, and early Alzheimer's disease who was brought in for medical evaluation after being found on the floor by her daughter. Mrs. B's daughter reports that her mother has seemed more confused and less steady on her feet for the previous two days. On the morning of evaluation Mrs. B is afebrile with normal pulse and blood pressure. Her respiratory rate is 28. Mrs. B's physical exam is remarkable for diminished breath sounds in the left lower lung, irregular heartbeat, and bilateral lower extremity weakness. She is oriented to person but not to place or time. Her chest x-ray shows a patchy infiltrate in the left lower lung. Laboratory results show a normal white count with slight bandemia. Blood urea nitrogen and creatinine are slightly elevated. Mrs. B is given one litre of intravenous fluids and treated with a floroquinolone antibiotic. After treatment of her pneumonia, Mrs. B returns to her baseline mental status.

Pathophysiology of Atypical Presentation and Relationship with Delirium

This case history illustrates that pneumonia in older adults does not always present with leukocytosis, fever, cough, and dyspnea. In one study, 50% of patients over age 84 with the diagnosis of pneumonia presented with delirium and 73% with weakness; however, cough and dyspnea were present in only 46% and 23% respectively.[1] The effects of illness on cortical brain function, including decreased sensory awareness and impaired language, may explain atypical symptoms in older adults.

The question that arises is why older adults, and long-term care facility residents in particular, are more likely to display cortical brain effects of acute illness. Decreased metabolic reserve, multiple comorbidities, cognitive deficits, and physiologic changes all contribute to atypical presentation of illness in the older population. Lessons from the studies of delirium, which is probably the proper term for most cases of "atypical presentation," may help answer this question.

Delirium is a geriatric syndrome characterized by acute onset, inattention, fluctuating course, disorganized thinking, and altered level of consciousness.[2] Although the pathophysiology of delirium is unclear, predisposing and precipitating factors have been well defined. Patients with dementia, multiple

Table 1: Typical and Atypical Presentations of Disease in Long-Term Care Residents

Disease	Typical Symptoms	Atypical Symptoms Common in Long-Term Care Residents
Pneumonia	Cough, fever, leukocytosis, dyspnea	Delirium, weakness, increased respiratory rate
Cardiac ischemia	Chest pain, arm pain, dyspnea, diaphoresis, nausea	Delirium, hypoxia
Drug reaction	Drowsiness, nausea, rash	Anorexia, confusion, apathy, falls, hallucinations, delirium
UTI	Dysuria, frequency of urination, hematuria	Delirium, weakness
Hyperthyroidism	Tachycardia, heat intolerance, anxiety, tremor	Heart block, fatigue, weight loss, lethargy
Peptic ulcer disease	Abdominal pain	Anemia, nausea, bleeding

chronic diseases, advanced age, vision and hearing impairments, functional impairment, and severe acute illness are susceptible to the development of delirium. Fever, infection, restraints, changes in environment, acute illness, and adverse drug reactions may cause delirium in vulnerable patients.

Atypical Presentation of Specific Conditions

Infectious disease is not the only type of illness that presents with non-specific symptoms in the older population. Dehydration, cardiac disease, endocrine disease, and vascular disease may present with non-specific symptoms such as delirium, falls, anorexia, and lethargy (Table 1).

Hypovolemia is traditionally diagnosed by checking orthostatic blood pressure and pulse, and assessing skin turgor. Many residents of long-term care facilities may be on beta-blockers or other medications that lower heart rate; therefore, pulse may not increase when they are dehydrated. In addition, normovolemic older patients tend to have less skin turgor than younger patients due to decreased elasticity of the skin. Furthermore, orthostatic hypotension may occur in 15% of non-dehydrated older adults.[3] Despite the above factors, research indicates that hypovolemia and dehydration are over-diagnosed in hospitalized long-term care patients. Approximately one-third of hospitalized older residents who have the clinical diagnosis of dehydration do not meet laboratory criteria for this diagnosis.[4]

Silent myocardial ischemia is more common in older patients. In one study, patients over 85 years old with myocardial infarction were less likely to present with chest pain, nausea, or vomiting. In this age group, the most common presenting symptom was shortness of breath. As the frequency of chest pain as a presenting symptom decreased, syncope, acute confusion, and stroke became more common.[5] Nearly 70% of patients over age 85 did not have chest pain as a presenting symptom. Clinical experience shows that congestive heart failure in nursing home patients may present with delirium.

Hyperthyroidism is more likely to present with cardiac arrhythmias (including heart block), fatigue, weight loss, and lethargy than with heat intolerance, tremor, nervousness, and tachycardia.[6] Only 3% of patients with hyperthyroidism present with atrial fibrillation, but this percentage climbs to 17% in patients in their 60s. Over 80% of hyperthyroid patients in their 70s have weight loss, while the all-patient rate is only 61%.[7] Hypoglycemia may be more likely to present with confusion and agitation than with diaphoresis and tachycardia.

Intra-abdominal processes are less likely to present with acute pain in the aging population. A nursing home patient with an acute abdomen may be less likely to present with pain, fever, and leukocytosis. In a study of close to 300 people undergoing diagnostic endoscopy, patients with endoscopically-proven peptic ulcer disease were less likely to have pain as a presenting symptom if they were more than 60 years of age. Nearly 30% of patients older than 60 years had symptoms or signs other than pain while only 7% of patients under 50 years did not report pain.[8]

Adverse drug reactions also have atypical features in nursing home residents. Most residents of long-term care facilities are on more than six medications and drug interactions are common. Anorexia, confusion, apathy, and falls may be due to anticholinergic or digoxin toxicity. H2 blockers may cause cognitive changes in these residents. They are more likely to suffer from delirium, hallucinations, confusion, and oversedation secondary to adverse drug reactions than community-dwelling older patients, who are more likely to suffer from gastrointestinal side effects. Neuropsychiatric complications comprise nearly 30% of adverse drug events in the long-term care population, but only 5% of these events occur in community-dwelling older adults.[9,10]

Atypical Signs Are Also Non-Specific

Patients with multiple medical problems often present with a mixed picture. A patient with a history of dementia and atrial fibrillation who presents with dyspnea, fever, and bilateral crackles may have pneumonia, congestive heart fail-

ure, or both. Differential diagnosis and treatment plans are more complex than in patients without multiple comorbidities. In the older population, more than half of patients do not fit the classical medical model of diagnosis in which one disease explains all the symptoms.[11]

Non-specific symptoms such as falls, delirium, and slight changes in vital signs may be caused by many different acute conditions, including infections, metabolic disorders, and adverse drug reactions. In other words, these non-specific clinical findings are analogous to diagnostic tests that have very low specificity. Older adults, and long-term care facility residents in particular, often have multiple symptomatic conditions at one time; therefore, a clinical finding such as dyspnea has imprecise clinical meaning because it may be caused by congestive heart failure, chronic obstructive pulmonary disease, pneumonia, pulmonary embolism, or anxiety.

Diagnosing Acute Illness in the Long-Term Care Setting

Care facility residents, whether older or not, usually have more severe cognitive and physical deficits than community residents. Frailty makes it more likely that illness will present atypically.[12] Delirium is two to five times more common in patients with an underlying dementia.[13]

Diagnosis of illness in the long-term care resident is complicated by the same factors that affect presentation of illness in community-dwelling older adults. Many residents of long-term care units are at the end stages of debilitating diseases such as Alzheimer's or Parkinson's disease. In addition to presenting with different signs of illness, long-term care patients often cannot communicate their symptoms due to dementia. Sixty to 80% of these residents have a diagnosis of dementia.[14] Providers rely on assessments of nurses, and more often nursing assistants, to determine when a clinical change in strength, appetite, or energy level occurs. An instrument that asks nursing assistants to assess changes from baseline in residents' appetite, behaviour, mobility, and energy level has been validated and has high specificity for acute illness.[15] Early diagnosis of acute illness in the nursing home requires nurses and nursing assistants who are able to descriptively document and communicate changes in behaviour and function in their residents. This means that practitioners must develop short, simple tools to document current function and status so that when a nursing assistant is away for two days, change is not missed.

Nursing assistants dress, bathe, and feed patients, as well as assist them with transfers and ambulation. They are the first to notice non-specific and atypical symptoms. They should be encouraged to report these signs and symptoms to the nurses and physicians caring for the patient. Tools for recognition of delirium and other non-specific symptoms need to involve nursing assistants. Teaching nursing assistants that these small signs could be early indicators of more serious disease may facilitate more prompt diagnoses of acute illness in the long-term care population.

How can a provider tell when a severely cognitively impaired resident with non-specific symptoms is having an acute reversible event as opposed to gradual progression of disease? Checking a urine culture every time a patient with dementia has an episode of agitation may result in treating asymptomatic bacteruria and unnecessarily exposing the patient to adverse effects of antibiotics. One study suggests that the non-specific symptoms with the highest predictive value of acute illness are lethargy, weakness, and decreased appetite.[16] In the same study, falls, agitation, and increased confusion had a weaker predictive value for acute illness, and depressed mood, aggression, delusions, and dizziness had no statistical association with acute illness.

Diagnosing acute illness in the nursing home requires clinicians to be vigilant regarding subtle changes and signs such as anorexia, fatigue, sedation, and falls. Medication review is a key component of assessment because atypical signs could be effects of a new medication or a drug interaction.

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